

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 12323910/EJH/LM	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> FOR FURTHER ACTION </div> <div style="width: 55%;"> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. </div> </div>
International application No. PCT/AU03/01113	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> International filing date (day/month/year) 29 August 2003 </div> <div style="width: 55%;"> (Earliest) Priority Date (day/month/year) 30 August 2002 </div> </div>
Applicant THE CORPORATION OF THE TRUSTEES OF THE ORDER OF THE SISTERS OF MERCY IN QUEENSLAND et al	

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1: Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☒ Certain claims were found unsearchable (See Box I).

3. ☒ Unity of invention is lacking (See Box II).

4. With regard to the title, ☐ the text is approved as submitted by the applicant.
☒ the text has been established by this Authority to read as follows:

GENERATION OF DENDRITIC CELLS FROM CD34+ PRECURSORS

5. With regard to the abstract, ☒ the text is approved as submitted by the applicant
☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure

☐ because this figure better characterizes the invention

☒ None of the figures

Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos :
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos : 1-27 (partially)
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
SEE SUPPLEMENTAL BOX
3. ☐ Claims Nos :
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

SEE SUPPLEMENTAL BOX

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. 7: C12N 5/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC (WPIDS) AND CHEMICAL ABSTRACTS

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
SEE BELOWElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPIDS, MEDLINE, CA**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Journal of Leukocyte Biology, 1 August 2002, vol. 72, Bontkes et al., "Expansion of dendritic cell precursors from human CD34+ progenitor cells isolated from healthy donor blood; growth factor combination determines proliferation rate and functional outcome", pages 321-9	1-27
<u>X</u> Y	The Journal of Immunology, 2001, vol. 166, Curti et al., "Stem Cell Factor and FLT3-Ligand Are Strictly Required to Sustain the Long-Term Expansion of Primitive CD34+DR- Dendritic Cell Precursors", pages 848-54	1-27
<u>X</u> Y	British Journal of Haematology, 1997, vol. 99, Herbst et al., "CD34+ peripheral blood progenitor cell and monocyte derived dendritic cells: a comparative analysis", pages 490-9	1-27



Further documents are listed in the continuation of Box C



See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search
3 October 2003Date of mailing of the international search report
14 OCT 2003

Name and mailing address of the ISA/AU

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Supplemental Box

(To be used when the space in any of Boxes I to VIII is not sufficient)

Continuation of Box No: I & II

The nature of the invention is not clear.

The specification states that the inventive concept relates to the use of cytokines to induce CD34+ cells to differentiate into dendritic cells. However, the use of cytokines to induce CD34+ cells to differentiate into dendritic cells would appear to be common general knowledge in the art:

- Blood. 2002 Jul;100(2):701-703, Materson et al.
- J Immunother. 2000 Jan;23(1):48-58
- J Hematother Stem Cell Res. 2001 Aug;10(4):569-78, Loudovaris et al.
- Cytotherapy. 2000;2(2):95-104, Enomoto et al.
- Immunol Cell Biol. 2002 Jun;80(3):216-25, Monji et al.

Therefore, there can only be an invention in the use of a specific cytokine or combination of cytokines. Different cytokines or combinations of cytokines would represent separate inventions. The limited examples provided in the specification only demonstrate the use of one particular combination of cytokines, viz; flt3-ligand, SCF, IL-3 and IL-6.

The specification appears to indicate that one aspect of the invention may relate to the pre-sorting of CD34+ cells into myeloid and lymphoid precursors prior to differentiation into dendritic cells (page 6, lines 26-29 and page 8, lines 15-25). The specification describes only one method by which this sorting may be achieved, viz; the use of FACS to isolate CD33(+)CD7(-)CD10(-) and CD33(+/-)CD7(+)CD10(+) populations.

The technical features of the invention are therefore considered to be either:

- the use of flt3-ligand, SCF, IL-3 and IL-6 in the differentiation of CD34+ cells into dendritic cells, or
- the pre-sorting of CD34+ cells into CD33(+)CD7(-)CD10(-) and CD33(+/-)CD7(+)CD10(+) populations prior to induction of differentiation into dendritic cells.

The wording of the claims does not limit them to the technical features of the invention as described by the specification (Rule 6.3(a)). Consequently, the claims do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out on the full scope of the claims.

Therefore, the scope of the claims has only been partially searched to the extent that they are limited to the technical features stated in the preceding paragraph.

The two sets of technical features identified above are considered to represent separate inventions. However, as all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.